3.0 Knowledge Management Concept and Hypothesis

3.1 Knowledge management concept

Knowledge management cycle

Knowledge can be classified into tacit knowledge and explicit knowledge (Polanyi, 1966). Nonaka and Takeuchi (1995) focused the interaction between tacit and explicit knowledge to create the new knowledge (SECI model). This interaction was shown in "Internalisation"- transformation from explicit to tacit knowledge- and "Externalisation"- transformation from explicit to tacit knowledge. Furthermore, they emphasized the role of "Socialization"- transformation from individual tacit knowledge to group-level tacit knowledge- that was often used in Japanese firms. They emphasized this kind of human-to-human interaction. They also described "Combination"- transformation from explicit to new explicit knowledge and distribution to overall organisation- as the process emphasized in Western countries. On the other hand, Davenport and Prusak showed the knowledge process- creation, codification of explicit knowledge or coordination of tacit knowledge, and transfer. They emphasized the knowledge distribution mechanism by highlighting the "Codification" and "Coordination". "Codification" is the articulated knowledge or its transformation process from the tacit knowledge or vague explicit knowledge into the shape that everyone can access. "Coordination" is the mechanism to make the person who has tacit knowledge accessible from everyone. They lacked the view of the interaction of two types of knowledge, but explained well the transfer mechanism of each knowledge. In order that we understand the whole knowledge process, we must see it from both viewpoints. This is

possible because they are complementary rather than contradictory. This holistic model is shown in Diagram2.

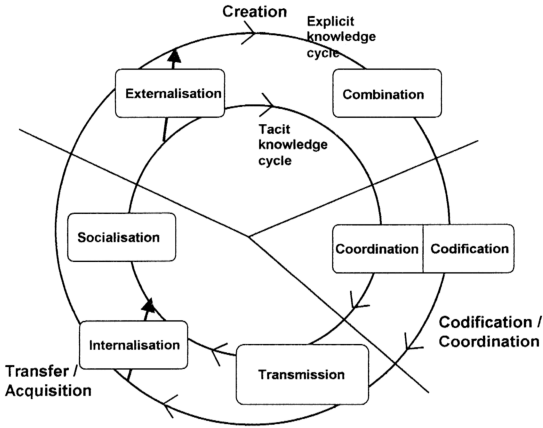

Diagram3-2 Holistic Knowledge creation and sharing cycle

Here "Combination" means the transformation from tacit knowledge to explicit knowledge and does not include the distribution even though Nonaka's SECI model included it into combination process. Distribution comprises codification/coordination and transmission. Transmission is the process to ensure to make the knowledge accessible from members of organization.

Knowledge management system

Each process mentioned in the above model has different type of knowledge management system.

In the externalisation process, in addition to daily-used tools such as telephone, fax, e-mail and formal meeting, Davenport and Prusak (1997) described informal conversations such as in water cooler, after-work hours (dinner, drink), Community of practice, Market fair/Open forum, Expert networks (distributed system), Video-conferencing, Decision audit programmes. Community of practice is especially popularised technique in the U.S. Market fair/Open forum is usually held to transfer the developed technology or other new knowledge to the organisational members. Decision audit programme is the system to ensure the quality of decision by other specialists' checking. Nomura Research Institute (NRI) add another system, Competence centre (NRI, 1999). This is the centralised system compared with distributed system of expert networks.

In the combination process, identification and analysis of best practices (Davenport and Prusak, 1997) is thought to be effective in this process. In addition, query program of OLAP, Data mining etc (data analysis techniques), Text mining technology and Off-the-Job training are also important techniques.

In coordination process, we have depended on the internal or external personal acquaintance and knowledge (information) brokers who knew the specialist. But today we uses the mailing list in the computer and Knowledge

map or Corporate Yellow Pages that is the list of the specialty of each employees (Davenport and Prusak, 1997).

In codification process, the company produces some explicit knowledge base on paper or electronic media. In addition, face-to-face communication that aims to transfer the explicit information and knowledge is included in this category. Davenport and Prusak (1997) described learned lessons database and masterclasses. Masterclasses are the lectures by retired or shortly retiring managers or specialists. Company products information, information of intellectual assets such as patent, standard operation manual, technical library, corporate library, homepage and datawarehouse are also important techniques. Document management must be well implemented to enhance the availability of the above techniques.

In transmission process, the important thing that should be provided is infrastructure to connect people to people, or people to information/knowledge. Recent IT enhances such connectivity such as local area network, intranet, groupware, e-mail, corporate portal and search engine in addition to the traditional phone and fax.

In internalisation process, learning through experience is thought to be the main process to really understand and acquire the new knowledge. Experimentation in the job, On-the-Job training, mentoring or apprenticeship programme and simulation support this process.

In socialization process, human-to-human interaction is indispensable to transfer knowledge each other. All face-to-face communications are included here. For example, Knowledge fair/Open forum, external seminar or vendor forum, Informal conversations in water coolers, Masterclasses, Brainstorming are included. This process also can be achieved on the virtual net, which has been demonstrated to be effective method (Lave and Wenger, 1991; Adams and Feeman, 2000; Hildreth and Kimbel, 2000). For instance, Community of practice, Video-conferencing, Video and CD-ROM, e-mail and others are included.

Organizational Factors

In addition to analysis of Malaysian Knowledge Management System, I also analysed the relation between knowledge management system and organization. Taking findings of the gurus in contingency approach into consideration, bureaucracy, decision-making style (power distribution), size, vision, and environment were adopted as tested variables. Organizational culture especially about knowledge sharing was also one of the most important factors (Bennet and Gabriel, 1999; NRI, 1999). In addition some management systems are also to be considered such as appraisal system, knowledge measurement system and training (NRI, 1999).

3.2 Hypothesis

Total level of Knowledge Management System (KMS) is thought to enhance the Knowledge Process Level (KPL)- the level of the effective use of knowledge creation and dissemination. This led to the first hypothesis

H1: The more knowledge management system is implemented in the company, the more the knowledge process level is enhanced.

Innovation could be stimulated by the management of knowledge (Nonaka and Takeuchi, 1995; Nonaka and Konno, 1995). It meant that enhanced knowledge process level by knowledge management led to the innovation. This finding should be examined in Malaysia. This consideration suggests the following hypothesis.

H2: The more knowledge process level is enhanced in the company, the more Innovative or adaptive the company is.

Regarding the corporate size, its influence looked different in accordance with the choice of variables (Peters and Waterman, 1982; Gooding and Wagner III, 1985). In terms of innovation the size was positively related to innovation (Fletcher et al., 1996). Hence the following hypothesis should be examined.

H3: The bigger the company is, the more knowledge management system is implemented.

Many gurus found that the less bureaucratic organization could be the more innovative organization. Horizontal or flat structure enhanced the innovation (Wilson, 1992; Brand 1998). Knowledge management fitted best with an open organizational environment (Wilkstom and Norman, 1994). These findings require testing the following hypothesis.

H4: The less bureaucratic the company is, the more knowledge management system is implemented.

Past research revealed that top management commitment to knowledge sharing, cross-functional teaming, reward and recognition programme

promoted the success of knowledge management implementation (American Productivity & Quality Centre, 1996). Other research said that traditional information and communication system was the biggest obstacle to create the knowledge-based organization (Chase, 1997) and that corporate vision was an important factor of successful knowledge management (Brand, 1998). These considerations suggest the following hypothesis.

H5: The more the company adopts the management systems that fit the knowledge process, the more knowledge management system is implemented.

Regarding corporate culture and knowledge management, there were many findings so far. Initially the fit of organizational culture with the environment and/or the corporate strategy created the high-performance organization (Wiener, 1988; Sherwood, 1988). Organizational culture was seen as the biggest obstacle to create the knowledge-based organization (Chase, 1997) and Knowledge management was a matter of corporate culture (Brand, 1998). Japanese successful transfer of skill on OJT depended partly on being free from fear of knowledge transfer thanks to lifetime employment and seniority (Ito, 1994). Culture to share was prerequisite to introduce KMS such as groupware (Downing and Clark, 1999). Mutual trust was also indispensable for knowledge exchange (Kim and Mauborgne, 1997). These findings explained the importance of the corporate culture congruent with the knowledge process. Especially we often see the reluctance to transfer of knowledge and information.

H6: The less reluctantly the employee share knowledge, the more knowledge management system is implemented.